Application No.: 09/974,581 Docket No.: JCLA7934

In The Claims:

Please amend the claims as follows:

Claim 1 (currently amended) An iterative method for blind deconvolution using an equalizer in a communications receiver for estimating one of users' symbol sequences ($u_j[n]$, j = 1, 2, ..., K), the method at each iteration comprising the steps of:

updating the equalizer coefficients $\boldsymbol{v}_I$ at the *I*th iteration using the following equation:

$$\boldsymbol{v}_I = \frac{\alpha \cdot \widetilde{\boldsymbol{R}}^{-1}\widetilde{\boldsymbol{d}}_{I-1}}{\sqrt{\widetilde{\boldsymbol{d}}_{I-1}^H \widetilde{\boldsymbol{R}}^{-1}\widetilde{\boldsymbol{d}}_{I-1}}};$$

determining the associated equalizer output $e_I[n]$; and

comparing inverse filter criteria $J_{p,q}(\boldsymbol{v}_I)$ with $J_{p,q}(\boldsymbol{v}_{I-1})$ and if $J_{p,q}(\boldsymbol{v}_I) > J_{p,q}(\boldsymbol{v}_{I-1})$, going to the next iteration, otherwise updating $\boldsymbol{v}_I$ through a gradient type optimization algorithm so that $J_{p,q}(\boldsymbol{v}_I) > J_{p,q}(\boldsymbol{v}_{I-1})$ and then obtaining the associated $e_I[n]$;

wherein $\widetilde{\mathrm{R}}$ is a expected value , $\widetilde{d}$ is a cumulation, α is a scale factor, and p,q are nonnegative integers.

Claim 2 (currently amended) The method of claim 1, ~~which~~ further ~~comprises~~ comprising a step of using a threshold decision to detect a user's symbol sequence associated with the obtained symbol sequence estimate [$\hat{u}_l[n] = e_I[n]$ (where l is unknown, and e_I[n] is an equalizer output)] in case of converge ~~as the method converges~~.

Claim 3 (currently amended) The method of claim 1, which further utilizes a multistage successive cancellation (MSC) procedure, at each stage comprising the steps of:

obtaining a symbol sequence estimate $\hat{u}_l[n] = e_l[n]$ (where l is unknown);

determining the associated channel estimate of the obtained symbol sequence $\hat{u}_l[n]$ by

$$\hat{\mathbf{h}}_l[k] = \frac{E[\mathbf{x}[n+k]\hat{u}_l^*[n]]}{E[|\hat{u}_l[n]|^2]}$$

wherein $\hat{\mathbf{h}}_l[k]$ is the channel estimate; and~~;~~

~~estimate $\hat{u}_l[n]$ (where l is unknown) using the following equation:~~

$$\cancel{\hat{\mathbf{h}}_l[k] =} \frac{E[\mathbf{x}[n+k]\hat{u}_l^*[n]]}{E[|\hat{u}_l[n]|^2]} \cancel{; \text{ and}}$$

updating $\mathbf{x}[n]$ by $\mathbf{x}[n] - \hat{\mathbf{h}}_l[n] * \hat{u}_l[n]$, wherein x[n] is non-Gaussian vector output measurements.

Claim 4 (currently amended) The method of claim 3, which further comprises a step of using a threshold decision to detect a user's symbol sequence associated with $\hat{u}_l[n]$ at each stage of the MSC procedure.

Claim 5 (currently amended) A method for iterative blind deconvolution using an equalizer in a communications receiver of a multi-input multi-output (MIMO) system, for estimating one of users' symbol sequences ($u_j[n]$, j = 1, 2, …, K), the method comprising the steps of:

updating ~~the~~ equalizer coefficients;

determining if ~~the value of the~~ an Inverse Filter Criteria (IFC) value in a ~~the~~ current iteration is larger than that obtained in ~~the immediately~~ a previous iteration and if so proceeding to the next iteration, otherwise updating the equalizer coefficients ~~such that the value of~~ to increase the IFC value ~~increases~~; ~~and~~

determining ~~the optimum~~ an equalizer, and an estimate of ~~output of the~~ driving inputs to the MIMO system~~.~~; and

detecting an estimation of the user's symbol sequence by a detection threshold.

Claim 6 (currently amended) The method of claim 5, wherein ~~the values of~~ the equalizer coefficients are obtained utilizing the following formula:

$$v_I = \frac{\alpha \cdot \tilde{R}^{-1}\tilde{d}_{I-1}}{\sqrt{\tilde{d}_{I-1}^{H}\tilde{R}^{-1}\tilde{d}_{I-1}}}$$

wherein $\tilde{R}$ is a expected value , $\tilde{d}$ is a cumulation, α is a scale factor, and v_I is the equalizer coefficient.

Claim 7 (currently amended) The method of claim 5, ~~which further comprises a~~ wherein the threshold decision is used to detect [[a]] the user's symbol sequence associated with the obtained symbol sequence estimate [$\hat{u}_l[n] = e_I[n]$ (where l is unknown, and $e_I[n]$ is an equalizer output at the Ith iteration)] in case of converge ~~as the method converges~~.

Claim 8 (currently amended) The method of claim 5, which further utilizes a multistage successive cancellation (MSC) procedure, at each stage comprising the steps of:

obtaining a symbol sequence estimate $\hat{u}_l[n] = e_l[n]$ (where l is unknown), wherein $e_l[n]$ is an equalizer output at the Ith iteration;

determining ~~the~~ an associated channel estimate of the obtained symbol sequence by

$$\hat{\mathbf{h}}_l[k] = \frac{E[\mathbf{x}[n+k]\hat{u}_l^*[n]]}{E[|\hat{u}_l[n]|^2]}$$

wherein $\hat{\mathbf{h}}_l[k]$ is the channel estimate; and~~;~~

~~estimate $\hat{u}_l[n]$ (where l is unknown) using the following equation~~

$$\cancel{\hat{\mathbf{h}}_l[k] =} \frac{E[\mathbf{x}[n+k]\hat{u}_l^*[n]]}{E[|\hat{u}_l[n]|^2]} \cancel{; \text{and}}$$

updating $\mathbf{x}[n]$ by $\mathbf{x}[n] - \hat{\mathbf{h}}_l[n] * \hat{u}_l[n]$, wherein x[n] is non-Gaussian vector output measurements.

Claim 9 (currently amended) The method of claim [[~~5~~]] 8, ~~which further comprises a~~ wherein the threshold decision is used to detect [[a]] the user's symbol sequence associated with $\hat{u}_l[n]$ at each stage of the MCS procedure.